AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A color conversion table generating method wherein a plurality of patches outputted from a printing device are subjected to color measuring and a color conversion table which defines ~~the~~ a correspondence between ~~the~~ color component values of various colors used in another image device and ink value data corresponding to ~~the~~ ink quantities of inks in individual ink colors used in the printing device is generated based on ~~the~~ a result of the color measuring, the method comprising:

~~a step for~~ extracting a ~~smaller~~ number of reference values smaller than ~~the~~ a total number of gradations in said ink value data with respect to each ink color and combining ~~them~~ the reference values thereby to create patch data which specifies ~~a~~ said plurality of ~~said~~ patches;

~~a step for~~ performing half tone processing where the patch data is ~~inputted~~ input and transformed into half tone image data which indicates ~~the~~ a presence or absence of ink dots to print ~~a~~ said plurality of ~~said~~ patches; and

~~a step for~~ generating said color conversion table based on color measuring data obtained by subjecting ~~a~~ said plurality of ~~the~~ printed patches to color measuring,

wherein

the colors in said patch data are colors obtained by extracting a ~~smaller~~ number of

reference values before correction smaller than the total number of gradations in predetermined

gradation values before correction, from the gradation values before correction, with respect to

each ink color and combining the reference values before correction, carrying out correction for

interpolation accuracy enhancement to increase the reference values before correction, and

thereby bringing the magnitude of values after the correction and the ink quantity into

substantially linear correspondence with each other;

wherein

said ink value data is defined so that a gradation value which is an integral value

existing in a predetermined range of value and corresponds to a higher-lightness range will be

reduced in ~~the~~ an ink recording rate corresponding to ~~the~~ a unit variation in that gradation value

as compared with gradation values corresponding to a lower-lightness range;

and wherein

in said half tone processing, gradations are represented by adjusting a count of dots

recorded per unit area and one step-variation in gradation results in a large number of steps in dot

variation, thus subtle variation which is substantially equivalent to a fractional portion is

represented, and ~~in said half tone processing,~~ ink quantities corresponding to the reference values

in said patch data are interpreted according to ~~the~~ a definition of the gradation values, while

keeping the subtle variation which is substantially equivalent to the fractional portion, to

generate said half tone image data.

2. (currently amended) The color conversion table generating method according to Claim 1, wherein said ink value data is defined by allocating the total number of gradations to part of the range of ~~value~~ values of said ink recording rate.

3. (currently amended) A color conversion table generating method for generating a color conversion table which defines ~~the~~ a correspondence between ink value data which specifies ~~the~~ ink quantities of inks in individual colors used in a printing device and ~~the~~ color component values of various colors used in another image device, the method comprising:

~~a step for~~ extracting gradation values where ~~the~~ an ink quantity and ~~the~~ a magnitude of ~~the~~ gradation values are in substantially linear correspondence with each other with respect to each ink color and combining ~~them~~ the gradation values to create first gradation value data;

~~a step for~~ subjecting the first gradation value data to correction for resolution enhancement with a higher rate of increase applied to a gradation value corresponding to a high-lightness range than to gradation values corresponding to a ~~lower~~ low-lightness range, to obtain said ink value data;

~~a step for~~ performing half tone processing, wherein gradations are represented by adjusting a count of dots recorded per unit area, and one-step variation in gradation results in a large number of steps in dot variation, thus subtle variation which is substantially equivalent to a fractional portion is represented, and in said half tone processing, taking into account deviations

equivalent to fractional portions obtained when the ink value data is subjected to correction

inverse to said correction for resolution enhancement to perform a print operation; and

a step for generating a color conversion table where said ink value data and the

color component values of various colors used in said another image device are in

correspondence with each other based on color measuring data obtained by subjecting the result

of the print operation to color measuring;

wherein,

said first gradation value data is extracted beforehand so that colors in the low-

lightness range will be larger in number than colors in the high-lightness range so as to

compensate the resolution which is relatively degraded in the low-lightness range by said

correction for resolution enhancement by interpolation accuracy.

4. (currently amended) The color conversion table generating method according to Claim

3, wherein the gradation values in said first gradation value data are created based on data

obtained by transforming coordinates in a predetermined color space constituted of a smaller

number of color components than the a number of ink colors into gradation values which

indicate the quantities of individual color inks by a predetermined transformation expression.

5. (currently amended) The color conversion table generating method according to Claim

3, wherein the gradation values in said first gradation value data are obtained by subjecting

gradation values where the ink quantity and the magnitude of gradation values are in

substantially linear correspondence with each other to γ correction where a smaller gradation

value is corrected with a higher rate of increase as compared with larger gradation values and ~~the~~

a result of the correction is outputted.

6. (currently amended) The color conversion table generating method according to Claim

3, wherein a gradation value which indicates the lowest lightness in said first gradation value

data is equivalent to ~~the~~ a highest ink recording rate at which the ink can be recorded on a

printing medium; and in said correction for resolution enhancement, a predetermined gradation

value range containing the gradation value which indicates the lowest lightness is excluded and

the correction is carried out so that the remaining gradation value range will be matched with the

whole gradation value range of said ink value data.

7. (currently amended) A print controller which refers to a color conversion table which

defines ~~the~~ a correspondence between ink value data which specifies ~~the~~ ink quantities of inks in

individual colors used in a printing device and ~~the~~ color component values of various colors used

in another image device, and creates print data which indicates output images on the printing

device from image data which indicates display images on the image device and causes a print

operation to be performed, the controller ~~comprises~~comprising:

an image data acquiring unit ~~for acquiring~~that acquires image data where ~~the~~a color at each pixel in a matrix pattern is rendered with gradations with respect to images on said another image device;

a color converting unit which extracts gradation values where ~~the~~an ink quantity and ~~the~~a magnitude of gradation values are in substantially linear correspondence with each other with respect to each ink color and combines the gradation values to create first gradation value data, subjects the first gradation value data to correction for resolution enhancement with a higher rate of increase applied to a gradation value corresponding to a ~~higher~~high-lightness range than to gradation values corresponding to a ~~lower~~low-lightness range to obtain said ink value data, subjects the ink value data to half tone processing, taking into account deviations equivalent to fractional portions obtained when correction inverse to said correction for resolution enhancement is carried out, and performs the print operation~~,~~;

a color conversion table generating unit that generates a color conversion table where said ink value data and the color component values of various colors used in said another image device are in correspondence with each other based on color measuring data obtained by subjecting the result of the print operation to color measuring, said first gradation value data being extracted beforehand so that colors in the low-lightness range will be larger in number than colors in the high-lightness range so as to compensate the resolution which is relatively degraded in the low-lightness range by said correction for resolution enhancement by interpolation accuracy, and said color converting unit refers to the thus generated color conversion table to color-convert said image data into corresponding ink value data;

a half tone processing unit for interpreting ink quantities indicated by the ink

value data from the color-converted ink value data and transforming the ink quantities into

pseudo half tone data where gradations are represented by ~~the~~ a recording density of ink droplets

recorded on a printing medium, wherein in said half tone processing, gradations are represented

by adjusting a count of dots recorded per unit area, and one-step variation in gradation results in

a large number of steps in dot variation, thus subtle variation which is substantially equivalent to

a fractional portion is represented;

a print data creating unit which creates print data for driving and causing the

printing device to discharge ink droplets according to the recording density specified by said

pseudo half tone data with respect to each pixel; and

a print data outputting unit ~~for outputting~~ that outputs the print data to the printing

device.

8. (currently amended) A color conversion table generator which generates a color

conversion table which defines ~~the~~ a correspondence between ink value data which specifies ~~the~~

ink quantities of inks in individual colors used in a printing device and ~~the~~ color component

values of various colors used in another image device, the generator ~~comprise~~ comprising:

a first gradation value data acquiring unit ~~for acquiring~~ that acquires first gradation

value data obtained by extracting gradation values where ~~the~~ an ink quantity and ~~the~~ a magnitude

of gradation values are in substantially linear correspondence with each other with respect to

each ink color and combining the gradation values;

an ink value data acquiring unit ~~for subjecting~~that subjects the first gradation

value data to correction for resolution enhancement with a higher rate of increase applied to a

gradation value corresponding to a ~~higher~~high-lightness range than to gradation values

corresponding to a ~~lower~~low-lightness range, to acquire ~~the~~a result of the correction as said ink

value data;

a print operation performing unit ~~for performing~~that performs half tone

processing, wherein in said half tone processing, gradations are represented by adjusting a count

of dots recorded per unit area, and one-step variation in gradation results in a large number of

steps in dot variation, thus subtle variation which is substantially equivalent to a fractional

portion is represented, said print operation performing unit taking into account deviations

equivalent to fractional portions obtained when the ink value data is subjected to correction

inverse to said correction for resolution enhancement to perform a print operation;

a print result color measuring unit ~~for subjecting~~that subjects the result of the print

operation to color measuring; and

a color conversion table generating unit ~~for generating~~that generates a color

conversion table where said ink value data and the color component values of various colors

used in said another image device are in correspondence with each other based on color

measuring data obtained by subjecting ~~the~~a result of the print operation to color measuring,

wherein

said first gradation value data is extracted beforehand so that colors in the low-

lightness range will be larger in number than colors in the high-lightness range so as to

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compensate the resolution which is relatively degraded in the low-lightness range by said

correction for resolution enhancement by interpolation accuracy.

    9. (currently amended) A <u>computer-readable</u> medium with a color conversion table

generating program recorded thereon ~~for~~ <u>to have a computer carry out a method for</u> generating a

color conversion table which defines ~~the~~ <u>a</u> correspondence between ink value data which

specifies ~~the~~ ink quantities of inks in individual colors used in a printing device and ~~the~~ color

component values of various colors used in another image device, ~~wherein the program causes a~~

~~computer to carry out~~ <u>the method comprising</u>:

      ~~a first gradation value data acquiring function of~~ acquiring first gradation value

data obtained by extracting gradation values where ~~the~~ <u>an</u> ink quantity and ~~the~~ <u>a</u> magnitude of the

gradation values are in substantially linear correspondence with each other with respect to each

ink color and combining the gradation values;

      ~~an ink value data acquiring function of~~ subjecting the first gradation value data to

correction for resolution enhancement with a higher rate of increase applied to a gradation value

corresponding to a ~~higher~~ <u>high</u>-lightness range than to gradation values corresponding to a

~~lower~~ <u>low</u>-lightness range and acquiring ~~the~~ <u>a</u> result of the correction as said ink value data;

      ~~a print operation performing function of~~ performing half tone processing, <u>wherein</u>

<u>in said half tone processing, gradations are represented by adjusting a count of dots recorded per</u>

<u>unit area , and one-step variation in gradation results in a large number of steps in dot variation,</u>

<u>thus subtle variation which is substantially equivalent to a fractional portion is represented, said</u>

half tone processing taking into account deviations equivalent to fractional portions obtained

when the ink value data is subjected to correction inverse to said correction for resolution

enhancement, and performing a print operation;

a print result color measuring function of subjecting the result of the print

operation to color measuring; and

a color conversion table generating function of generating a color conversion

table where said ink value data and the color component values of various colors used in said

another image device are in correspondence with each other based on color measuring data

obtained by subjecting the a result of the print operation to color measuring; wherein

said first gradation value data is extracted beforehand so that colors in the low-

lightness range will be larger in number than colors in the high-lightness range so as to

compensate the resolution which is relatively degraded in the low-lightness range by said

correction for resolution enhancement by interpolation accuracy.

Claim 10 (canceled).

11. (currently amended) A correspondence definition data creating method wherein a

plurality of patches outputted from a printing device are subjected to color measuring, and

correspondence definition data which defines the a correspondence between the color component

values of various colors used in another image device and gradation values corresponding to the

ink quantities of inks in individual colors used in the printing device is created based on ~~the~~ a

result of the color measuring, the method comprising:

a step for extracting a ~~smaller~~ number of reference values smaller than the total

number of gradations in gradation values corresponding to said ink quantities with ~~respected~~

respect to each ink color and combining ~~them~~ the reference values thereby to create patch data

which specifies ~~a~~ said plurality of ~~said~~ patches;

~~a step for~~ performing half tone processing where the patch data is ~~inputted~~ input

and transformed into half tone image data which indicates ~~the~~ a presence or absence of ink dots

to print ~~a~~ said plurality of ~~said~~ patches; and

~~a step for~~ creating said correspondence definition data based on color measuring

data obtained by subjecting ~~a~~ said plurality of ~~the~~ printed patches to color measuring,

wherein

gradation values corresponding to said ink quantities are so defined that a

gradation value which is an integral value existing in a predetermined range of ~~value~~ values and

corresponds to a ~~higher~~ high-lightness range will be reduced in ~~the~~ an ink recording rate

corresponding to ~~the~~ a unit variation in that gradation value as compared with gradation values

corresponding to a ~~lower~~ low-lightness range;

and wherein

in said half tone processing, gradations are represented by adjusting a count of

dots recorded per unit area, and one-step variation in gradation results in a large number of steps

in dot variation, thus subtle variation which is substantially equivalent to a fractional portion is

represented, and ink quantities corresponding to reference values in said patch data are

interpreted according to ~~the~~ a definition of the gradation values, while keeping the subtle

variation which is substantially equivalent to the fractional portion, to generate said half tone

image data.

12. (currently amended) The correspondence definition data creating method according to

Claim 11, wherein said gradation values corresponding to ink quantities are defined by allocating

~~the~~ a total number of gradations to part of the range of value of ink recording rate.

Claims 13-17 (canceled).

18. (currently amended) A print controller which refers to a correspondence definition

data which defines ~~the~~ a correspondence between ink value data which specifies ~~the~~ ink

quantities of inks in individual colors used in a printing device and ~~the~~ color component values

of various colors used in another image device, and creates print data which indicates output

images on the printing device from image data which indicates display images on the image

device and causes a print operation to be performed, the controller comprising:

an image data acquiring unit ~~for acquiring~~that acquires image data where the color

at each pixel in a matrix pattern is rendered with gradations with respect to images on said

another image device;

a color converting unit which performs a print operation with a plurality of pieces

of ink value data which specify said ink quantities of inks in individual colors, obtained by

correcting first gradation value data where ~~the~~ an ink quantity and ~~the~~ a magnitude of gradation

values are in substantially linear correspondence with each other with a higher rate of increase

applied to a gradation value corresponding to a ~~higher~~high-lightness range than to gradation

values corresponding to a ~~lower~~low-lightness range; refers to correspondence definition data

where said ink value data and ~~the~~ color component values of various colors used in said another

image device are in correspondence with each other, based on color measuring data obtained by

subjecting ~~the~~ a result of the print operation to color measuring; and color-converts said image

data into corresponding ink value data;

a half tone processing unit which interprets ink quantities indicated by the ink

value data from the color-converted ink value data and transforms the ink quantities into pseudo

half tone data where gradations are represented by ~~the~~ a recording density of ink droplets

recorded on a printing medium, wherein in said half tone processing, gradations are represented

by adjusting a count of dots recorded per unit area, and one-step variation in gradation results in

a large number of steps in dot variation, thus subtle variation which is substantially equivalent to

a fractional portion is represented;

a print data creating unit which creates print data for driving and causing the

printing device to discharge ink droplets according to the recording density specified by said

pseudo half tone data; and

a print data outputting unit which outputs the print data to the printing device.

Claims 19-22 (canceled).